DPA*four*125, DPA*four*250 AMPLIFIERS

Operating Manual

Operating manual, DPA Series **DPA-10UMS01-V01R04**

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1. Introduction:

The *DPAfour* is a 2U high 19" rack mountable, 4-channel class-D power amplifier, transformer isolated for 100V, 70V, 50V and low-impedance distributed loudspeaker systems.
These amplifiers have a dual voltage mains 115/230 VAC and a 24 VDC battery back-up input which allows it to be used in combination with a battery backup system for maximum availability and durability in an emergency evacuation system.
There are 3 types of power amplifiers available in the DPA*four* range of products.

2. General description

The DPA*four* (Digital Power Amplifier) is designed for any public address or voice alarm system application.The DPA*four* amplifiers were specifically developed to meet the requirements of EN54-16 and can therefore also be used as part of fire detection and fire alarm systems.

For safety installations, each amplifier module is fitted with its own 230 VAC/24 VDC power supply for increased system reliability. To avoid handling errors, the gain setting for each amplifier channel is set using the potentiometer located at the back of the apparatus. In addition to standard electronic protection, DPA*four* amplifiers also have electronic and thermal protection to protect them from all potential hazards.

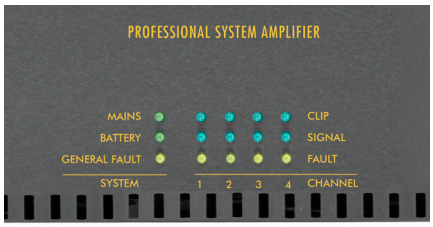
A fan provides forced cooling for the final power shelves and internal parts of the apparatus. It starts automatically when the temperature reaches a certain threshold, and stops when it returns to normal values. The functionality of the cooling system is monitored by the internal control system.

The indicators on the front panel will display the status of each amplifier: AC or DC power supply, any internal fault and the presence of audio and/or audio overload.

The DPA*four* amplifier series can be ordered with optional 115V power supply. Please contact your local dealer or your regional Ateis branch office.

3. Front Panel Features

Signal and clip indicators:



The blue LEDs used for signal indication will activate when the signal at the associated input has reached the threshold (minimum) level. The clip LEDs will activate when the maximum permissible input level has been reached.

Temperature:

If the device internal temperature exceeds 95 degrees C, the TEMP LED will light and the associated amplifier will shut down until the temperature falls below 95 degrees C. The amplifier will resume function automatically. Always ensure that a rack cabinet is sufficiently well-ventilated.

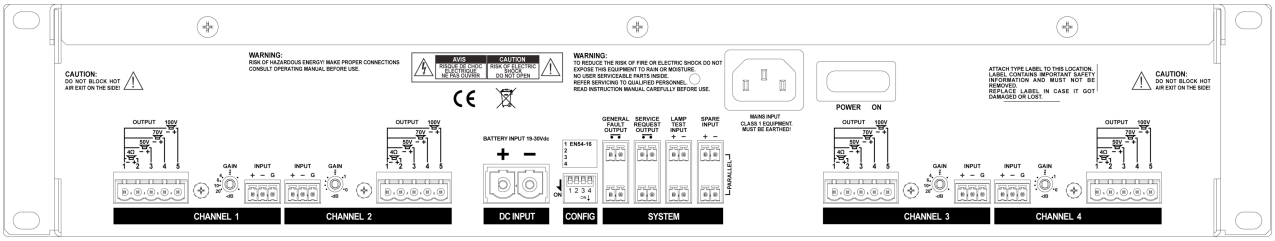
DC:

The DC LED activates when the DPA*four* amplifier is powered by a 24VDC power supply.

Power:

The Power LED activates when the DPA*four* amplifier is ON and powered with either 230/115VAC or 24VDC.

4. Rear panel features



AC Power Inlet:
The 3 pin IEC connector is located in the centre of the amplifier rear panel. It accepts a standard mains power lead fitted with an IEC connector.

AC/DC Fuse Receptacles:
Both AC and DC power inputs are protected by means of electronic fuses. There are no serviceable parts inside of the amplifier case.

Power Switch:
The power switch is located next to the power inlet on the rear panel. When the power switch is in the “ON” position, the front panel power LED will be lit.

24VDC battery backup connector:
The DPA*four* amplifier can be operated with battery backup. The connector is located on the central part of the amplifier rear panel. This 24VDC power supply can be used where AC power is not available or according to EN54 as a secondary supply. When in use, the front panel Power LED will activate in addition to the front panel DC LED.

CAUTION! If connected directly to a battery unit, this connection should be externally fused with 50A max.
This is not required when connected to the Ateis BECS150 Charger and Supply unit

Channel 1-4 Audio Output:
For each amplifier channel, there is a dedicated Audio Output connector for connection of a single selection from a 4Ohm loudspeaker load **or** one of a 50V, 70V or 100V line loudspeaker load not to exceed the rating of the amplifier output. For each load type, the Com point is the –ve terminal. The 4Ohm, 50V, 70V and 100V are the +ve terminals for each load type.

Channel 1-4 Inputs:
For each channel, there is a Euro terminal block balanced input. Each input offers gain adjustment as required.

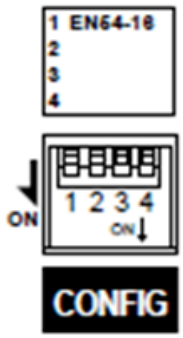
General Fault Output Contact:
The fault contact indicates an amplifier fault by giving an opening contact. (NC)

Service Request Output Contact:
The Service Request contact indicates that maintenance is needed. This is indicated by giving an opening contact. (NC)

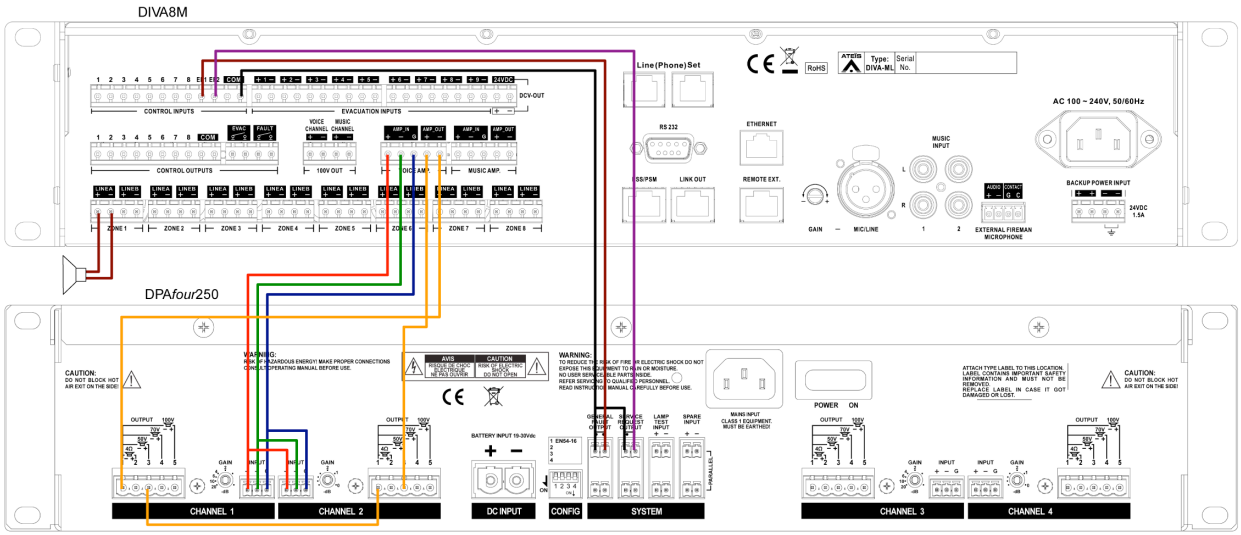
Lamp Test Input Contact:
By closing this input contact, all LEDs on the front display of the amplifier will activate.

Spare Input Contact:
For future use.

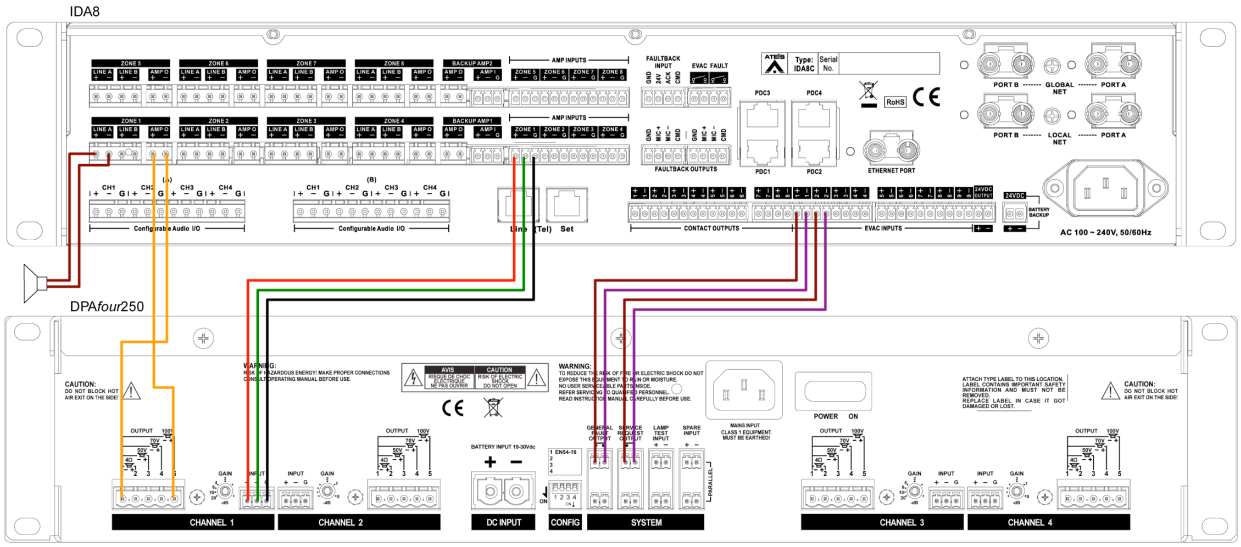
Configuration switches:

	Switch Nr.		Function
	1	ON OFF	The indicators on the front side will comply with the requirements of EN54-16. 9 (most indicators are off) All indicators will be working.
	2	ON OFF	Sleep modus disabled when working on battery power. Sleep modus enabled (wake up is done by 18 – 20 KHz monitoring tone)
	3	ON OFF	Sleep modus disabled when working on battery power. Sleep modus enabled (wake up is done by 18 – 20 KHz monitoring tone)
	4		No function.

5. Wiring Examples



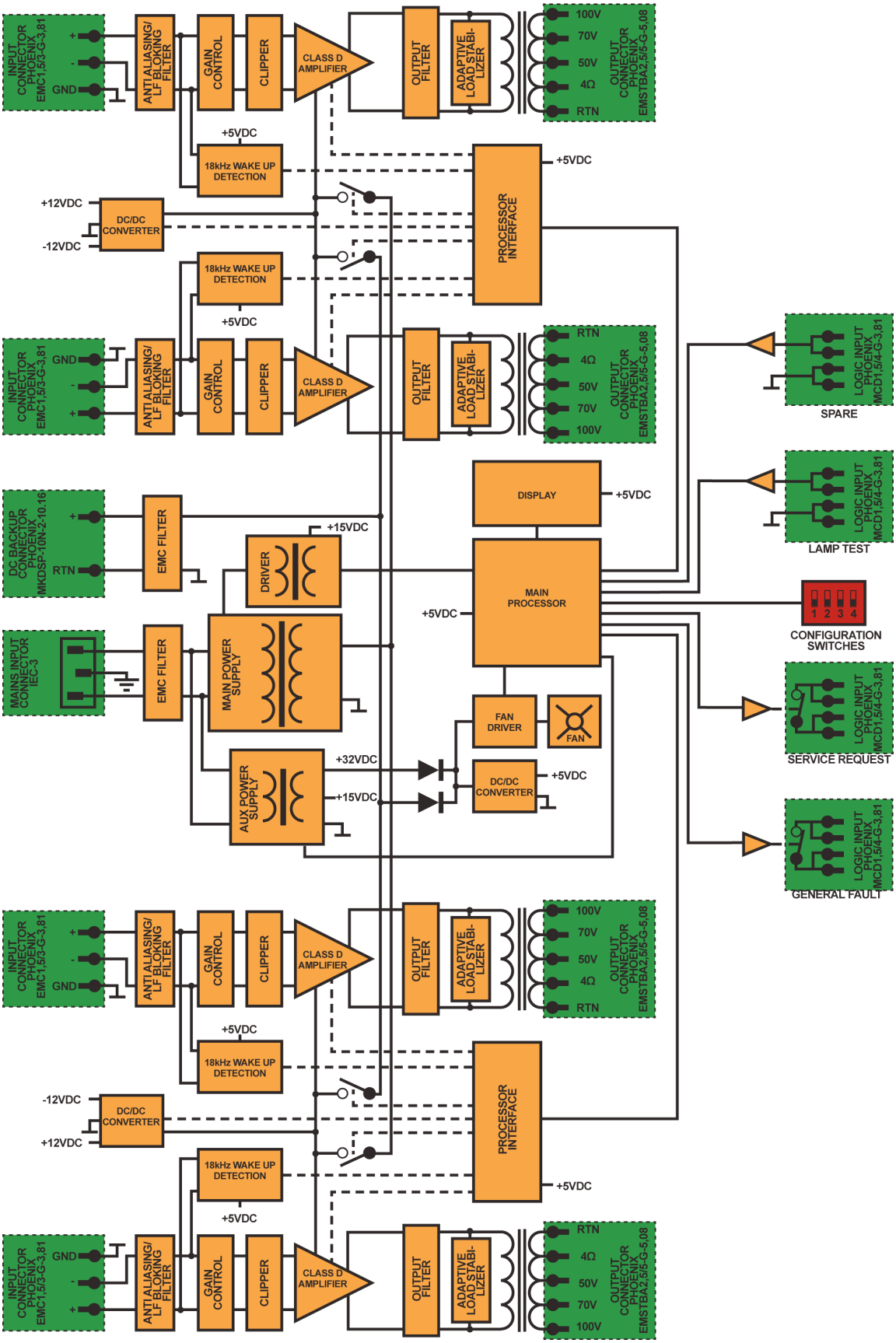
Diva-8 DPA wiring example with DPA ch 1&2 combined *



IDA8 & DPA wiring example

* In case of combined DPA channels, gain settings should be set at equal level for both channel 1&2 and/or 3&4

6. Block Diagram



7. Technical Data Overview

Power supply DPA*four*xx	Unit	DPA*four*125	DPA*four*250
Nominal AC input voltage	V	115 or 230, 50-60 Hz internally selectable	
AC input voltage range	%	+/- 15	
Peak inrush current	A	<10	
Nominal DC input voltage	V	24	
DC input voltage range	V	19-30	
Idle power consumption AC all channels on	W	12	15
Idle power consunption AC all channels standby	W	1 – 2	
Idle current DC channels standby	mA	30	
AC fuse rating	A	6,3 AT-H250V	8 AT-H250V
DC fuse rating	A	30AF-H	50AF-H
Overall power efficienty 230VAC input max ouput power @1kHz	%	83	
Overall power efficienty DC input max ouput power @1kHz	%	94	95
Power consumption			
Standby	A	0,03	0,03
Surveillance	A	1,45	1,65
1/8 Power	A	4,5	8,77
1/2 Power	A	11,25	21,93
Max Current	A	22,5	43,85
Amplifier DPA*four*xx			
Continuous nominal output power per channel driven into nominal load @1kHz 30° c ambient	W	125 80Ω/62,5nF	250 40Ω/62,5nF
Continuous nominal output power per channel driven into nominal load @1kHz 55° c ambient	W	TBA	TBA
Nominal balanced input level for 100V output @1kHz and nominal load	V	0,775	
Balanced input level trim range for 100V output @1kHz and nominal load	V	0,775 – 8	
Max balanced input level	V	8	
Input impedance @1kHz	Ω	20K	
Input common mode rejection @<1kHz	dB	>60	
Frequency response(-3dB)	Hz	50-20k 80Ω/62,5nF	50-20k 40Ω/62,5nF
Output voltage drop between no load and nominal load	dB	<1 80Ω/62,5nF	<1 40Ω/62,5nF
S/N ref nominal power @1kHz 22Hz–22kHz	dB	>90 80Ω/62,5nF	>90 40Ω/62,5nF
THD nominal power -3dB @1kHz 22Hz–22kHz	%	<0,1 80Ω/62,5nF	<0,1 40Ω/62,5nF
Crosstalk between channel 50Hz-20kHz nominal load	dB	<-70 80Ω/62,5nF	<-70 40Ω/62,5nF
Connectivity			
Main AC input socket		IEC-3	
DC input socket		PHOENIX PC6-16/2-G1-10, 16	
Audio input socket		3 pin PHOENIX 3,81mm	
Audio output socket		5 pin PHOENIX 5,08mm	
Nominal output voltage taps	V	0V31,6-50-70-100	0V31,6-50-70-100
RS485 interface		4 pin PHOENIX 3,81mm	
Mechanical			
Front panel width	mm	482	
Back panel width	mm	445	
Height	mm	88,5	
Width	mm	370	
Net. Weight	Kg	14	18
Gross weight (including packaging)	Kg	15,5	19,5
Package dimensions	mm	150x460x600	

8. Safety Declaration

Warning
This sign indicates a potentially hazardous situation that can result in death or serious personal injury.

- Do not expose the DPA*four* to extreme temperatures, direct sunlight, humidity, or dust, which could cause fire or electrical shock hazard.
- Keep away water or other liquids from the DPA*four*, otherwise fire or electrical shock may result.
- This unit is equipped with a single pole disconnect device (fuse) in the phase (live) wire. If an un-polarised mains connection is used, the receptacle the unit is connected to must be equipped with a two pole disconnect device (fuse) of appropriate rating!
- Connect the power cord only to an AC outlet of the type stated in this Owner's Manual or as marked on the unit, otherwise fire and electrical shock hazard results.
- When disconnecting the power cord from an AC outlet always grasp the plug. Never pull the cord. A damaged power cord is a potential risk of fire and electrical shock hazard.
- Avoid touching power plugs with wet hands. Doing so is a potential electrical shock hazard.
- Observe the correct polarity when operating the DPA*four* from a DC power source. Reversed polarity may cause damage to the unit or the batteries.
- Avoid placing heavy objects on power cords. A damaged power cord is a fire and electrical shock hazard.
- Do not cut, scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard. Ask your ATEÏS dealer for replacement.
- Immediately turn off the unit, remove the power cord from the AC outlet and consult your ATEÏS dealer in any of the following circumstances:
  - Smoke, odour, or noise coming from the unit.
  - Foreign objects or liquids falling inside the DPA*four*.
  - The unit has been dropped or the shell is damaged.
  - The power cord is damaged.

If you continue using the DPA*four*, fire and electrical shock may result.

- Do not drop or insert metallic objects or flammable materials into the unit as this may result in fire and electrical shock.
- Do not remove the DPA*four* 's cover, as there are exposed parts inside carrying high voltages that may cause an electrical shock. Contact your ATEÏS dealer if internal inspection, maintenance, or repair is necessary.
- Do not try to make any modifications to the DPA*four*. This is a potential fire and electrical shock hazard.
- Slots and openings in the unit are provided for ventilation. To ensure reliable operation and to prevent overheating of the unit, these openings must not be blocked or covered!
- Leave enough space above and below the unit to provide good ventilation of the DPA*four*. If the airflow is not adequate, the DPA*four* will overheat and may cause a fire.

Caution
This sign indicates a potentially hazardous situation that can result in moderate or minor personal injury and/or property damage.

- To prevent the unit from falling and causing personal injury and/or property damage, avoid installing or mounting the unit in unstable locations.
- Operate the DPA*four* in an environment with a free-air temperature of between 0 °C and 55 °C (32 °F and 130 °F).
- Turn off all audio equipment when making any connections to the DPA*four*, and make sure to use adequate cables.
- Do not use benzene, thinner, or chemicals to clean the DPA*four*. Use only a soft, dry cloth.
- If the DPA*four* is moved from a cold place (e.g., overnight in a car) to a warmer environment, condensation may form inside the unit, which may affect performance. Allow the DPA*four* to acclimatize for about one hour before use.

9. International sales and service points

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